1   **CLAIMS**

2   What is claimed is:

1   1.   A VoIP telephone comprising:

2   a network communication system (16) for encapsulating data into IP frames (42)

3   for exchange with remote devices over a frame switched network (12);

4   a system client application (24) coupled to the network communication system

5   (16) for exchanging call set up messages (44) with a remote VoIP gateway (36) to

6   establish a media channel for the exchange of media session data;

7   a dialog system (32) coupled to the network communication system (16) for:

8   translating frames of compressed digital audio data originated from a

9   remote device to recreate remote voice band (54); and

10   detecting and translating local voice band (56) to compressed digital audio

11   data for transmission to the VoIP gateway (36);

12   detecting in-band signaling received from the VoIP gateway (36); and

13   providing session status signals (52), corresponding to the detected in

14   band signaling, to a presentation module (28);

15   the presentation module (28) receiving the session status signals (52) driving a

16   display of session status messages (50) on a display screen (30).

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1   2.   The VoIP telephone of claim 1, wherein the system client (24) further provides

2   session status signals (52) to the presentation module (28) and the presentation module

3   (28) drives the display of session status messages (50) in accordance with both the

4   session status signals (52) from the dialog system and the system client (24).

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1   3.   The VoIP telephone of claim 2, wherein:

2   the in-band signaling (62) is at least one of frequency signaling, cadence

3   signaling, and phase shift signaling within the remote voice band (54); and

4   the dialog system (32) detects frequency, cadence, and phase shift of the remote

5   voice band (54) and generates a session status signal (52) corresponding to the

6   detected in-band signaling (62).

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1   4.   The VoIP telephone of claim 3, wherein:

2   the presentation module (28) comprises a message look up table (64) storing a

3 plurality of session status messages (50), each in association with a session status

4 signal (52); and

5   the presentation module (28) generates a session status message (50) on the

6 display (30) in response to receiving a session status signal (52) by looking up the

7 session status message (50) that corresponds to the session status signal (52) in the

8 message look up table (64).

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1   5.   A VoIP telephone comprising:

2   a network communication system (16) for encapsulating data into IP frames (42)

3 for exchange with remote devices over a frame switched network;

4   a system client application (24) coupled to the network communication system

5 (16) for exchanging call set up messages (44) with a remote VoIP gateway (36) to

6 establish a media channel (46) for the exchange of media session data (48);

7   a compression module (26) coupled to the network communication system (16)

8 for:

9   receiving session media data (48) received over the frame switched

10 network (12) and recreating remote voice band (54) for driving a speaker;

11   receiving a local voice band (56) corresponding to audio detected by a

12 microphone (38) and generating media session data (48) for transmission over the

13 frame switched network; and

14   a display screen (30) for displaying a session status message (50) corresponding

15 to in-band signaling (62) within the remote voice band (54).

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1   6.   The VoIP telephone of claim 5, further comprising:

2   an in-band signal detection module (60) for detecting the in-band signaling (62)

3 within the remote voice band (54) and generating a session status signal (52)

4 corresponding thereto; and

5   the presentation module (28) receives the session status signal (52) and

6   generates the session status message (50) in response to receiving the session status

7   signal.

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1   7.   The VoIP telephone of claim 6, wherein:

2   the in-band signaling (62) is at least one òf frequency signaling, cadence

3   signaling, and phase shift signaling; and

4   the in-band signal detection module (60) detects the frequency signaling,

5   cadence signaling, and phase shift signaling within the remote voice band and

6   generates a session status signal (52) corresponding to detected in-band signaling (62).

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1   8.   The VoIP telephone of claim 7, wherein:

2   the presentation module (28) comprises a message look up table (64) storing a

3   plurality of session status messages (50), each in association with a session status

4   signal (52); and

5   the presentation module (28) generates a session status message (50) on the

6   display (30) in response to receiving a session status signal (52) by looking up the

7   session status message (50) that corresponds to the session status signal (52) in the

8   message look up table (64).

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1   9.   The VoIP telephone of claim 6:

2   wherein the system client application (24) further generates a session status

3   signal (52) related to the media channel (46); and

4   the presentation module (28) receives both the session status signal (52)

5   generated by the system client application (24) and the session status signal (52)

6   generated by the in-band signal detection module (60) and generates a plurality of

7   session status messages (50), each in corresponding to a received session status

8   signal (52).

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1   10.   The VoIP telephone of claim 9, wherein:

2   the in-band signal (62) is at least one of a dual tone multi-frequency signal within

3   the audio signal (54) and a polarity change of the audio signal (54); and

4   the in-band signal detection module (60) detects both the dual tone multi-

5   frequency signal and the polarity change within the audio signal (54) and generates a

6   session status signal (52) corresponding to the detected in-band signal (62).

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1   11.   The VoIP telephone of claim 10, wherein:

2   the presentation module (28) comprises a message look up table (64) storing a

3   plurality of session status messages (50), each in association with a session status

4   signal (52); and

5   the presentation module (28) generates a session status message (50) on the

6   display (30) in response to receiving a session status signal (52) by looking up the

7   session status message (50) that corresponds to the session status signal (52) in the

8   message look up table (64).

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1   12.   The VoIP telephone of claim 6, further comprising:

2   a key pad system (58) for modulating the local voice band (56) with a tone

3   corresponding to an operator depressed key to generate an in-band signaling (62)

4   within the local voice band (56); and

5   the in band signal detection module further detects in-band signaling within the

6   local voice band and generates a session status signal corresponding thereto;

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1   13.   The VoIP telephone of claim 12, wherein:

2   the in-band signal (62) is at least one of a dual tone multi-frequency signal within

3   the audio signal (54) and a polarity change of the audio signal (54); and

4   the in-band signal detection module (60) detects both the dual tone multi-

5   frequency signal and the polarity change within the audio signal (54) and generates a

6   session status signal (52) corresponding to the detected in-band signal (62).

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1   14.   The VoIP telephone of claim 13, wherein:

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2   the presentation module (28) comprises a message look up table (64) storing a

3   plurality of session status messages (50), each in association with a session status

4   signal (52); and

5   the presentation module (28) generates a session status message (50) on the

6   display (30) in response to receiving a session status signal (52) by looking up the

7   session status message (50) that corresponds to the session status signal (52) in the

8   message look up table (64).

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1   15.   A method of operating a VoIP telephone comprising:

2   exchanging call set up messages (44) with a remote VoIP gateway (36) to

3   establish a media channel (46) for the exchange of media session data (48);

4   receiving session media data (48) received over the media channel;

5   decompressing the session media data to recreate remote voice band (54) for

6   driving a speaker;

7   receiving a local voice band (56) corresponding to audio detected by a

8   microphone (38);

9   generating media session data (48) corresponding to the local voice band for

10   transmission over the media channel;

11   detecting the in-band signaling (62) within the remote voice band (54); and

12   displaying a session status message (50) corresponding to the detected in-band

13   signaling (62) on a display screen.

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1   16.   The method of operating a VoIP telephone of claim 15, wherein:

2   the in-band signaling (62) is at least one of frequency signaling, cadence

3   signaling, and phase shift signaling; and the method further comprises:

4   detecting frequency signaling, cadence signaling, and phase shift signaling within

5   the remote voice band and generating a session status signal (52) corresponding to

6   detected in-band signaling (62).

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1   17.   The method of operating a VoIP telephone of claim 16, wherein the step of

2 displaying a session status message (50) corresponding to the detected in-band

3 signaling (62) on a display screen comprises looking up the session status message

4 (50) that corresponds to the session status signal (52) in a message look up table (64).

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1 18.   The method of operating a VoIP telephone of claim 15, further comprising:

2   generating a session status signal (52) related to VoIP signaling during

3 establishment of the media channel (46); and

4   displaying a session status message (50) corresponding to the generated

5 session status signal related to VoIP signaling.

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1 19.   The method of operating a VoIP telephone of claim 18, wherein:

2   the in-band signaling (62) is at least one of frequency signaling, cadence

3 signaling, and phase shift signaling; and the method further comprises:

4   detecting frequency signaling, cadence signaling, and phase shift signaling within

5 the remote voice band and generating a session status signal (52) corresponding to

6 detected in-band signaling (62).

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1 20.   The method of operating a VoIP telephone of claim 19, wherein the step of

2 displaying a session status message (50) corresponding to the detected in-band

3 signaling (62) and the generated session status signal related to VoIP signaling

4 comprises looking up the session status message (50) that corresponds to the session

5 status signal (52) in a message look up table (64).

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1 21.   The method of operating a VoIP telephone of claim 15, further comprising:

2   modulating the local voice band (56) with a DTMF tone corresponding to an

3 operator depressed key to generate in-band signaling (62) within the local voice band

4 (56);

5   detecting in-band signaling within the local voice band and generates a session

6 status signal corresponding thereto; and

7   displaying a session status message (50) corresponding to the detected in-band

8   signaling (62) within the local voice band on a display screen.

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1   22.   The method of operating a VoIP telephone of claim 21, wherein:

2   the in-band signaling (62) is at least one of frequency signaling, cadence

3   signaling, and phase shift signaling; and the method further comprises:

4   detecting frequency signaling, cadence signaling, and phase shift signaling within

5   the remote voice band and generating a session status signal (52) corresponding to

6   detected in-band signaling (62).

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1   23.   The method of operating a VoIP telephone of claim 22, wherein the step of

2   displaying a session status message (50) corresponding to the detected in-band

3   signaling (62) and the generated session status signal related to VoIP signaling

4   comprises looking up the session status message (50) that corresponds to the session

5   status signal (52) in a message look up table (64).

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